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ABSTRACTS

from

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(Pages refer to the Japanese originals of this volume unless otherwise noted.)

On the Retting of Vegetable Fibre Materials.

The Useful Bacteria for the Retting of Kenaf.

(pp. 345∼348)

By Tosio NAKAHAMA.

(Kanebo Yamashina Institute; Received Apr. 1, 1940.)

Twelve strains of aerobes and ten strains of anaerobes were isolated from the fermenting vat.

In carrying out pure fermentations of kenaf with these bacteria, one strain of aerobic bacillus and one strain of anaerobic coccus were selected as the most useful organisms.

According to their morphological, cultural and physiological characteristics, these bacteria were found to be new species, and named *Listerella hibiscus liquefaciens* and *Micrococcus hibiscus* respectively.

Studies on Sucrose Diet. (II)

(pp. 349∼368)

By Yosito SAKURAI and Sizu OMORI.

(Research Laboratory of Meiji Sugar Co,; Received March 22, 1940.)

The rats fed on the following synthetic diet containing exhausted cane molasses as the source of vitamin B complex except B_1 and B_2, grew normally, indicating that the diet is complete in all respects.

Sucrose	65
Fish protein	15
Butter fat	10
Salts mixture	5
Cane molasses	5

Daily supplements	
Vitamin B_1 hydrochloride	7.5 micrograms
Flavin solution	corresponding to 1.6 grams of egg white
Cod liver oil	2 drops

When vitamin B_1 was subtracted from the above diet rats developed polyneuritis within forty days. The duration until the development of polyneuritis was somewhat longer in the case when purified starch or dextrin was given as the source of carbohydrate than when glucose or sucrose was given. Even the rats nourished on the deficient diet supplemented with daily dose of 1.5 micrograms of vitamin B_1 showed apparent polyneuritic symptoms when glucose or sucrose was fed. From these results it is concluded that rats need more vitamin B_1 when glucose or sucrose is used.

Nearly the same results were also obtained concerning vitamin B_2.

Rats receiving the diet containing butter fat in high percentage, lacking in carbohydrate, developed the syndromes of acrodynia when vitamin B_6 was absent, so also did the rats fed on sucrose diet which contained no fat except linolic acid.

	Fatty diet	Sucrose diet
Fish protein	25	25
Salts mixture	5	5
Butter fat	70	—
Sucrose	—	70

Daily supplements	
Vitamin B_1 hydrochloride	7.5 micrograms
Flavin solution	corresponding to 1.6 grams of egg white
Nicotinic acid	1.5 milligrams
Linolic acid	50 milligrams
Biosterin (Vitamin A and D)	2 milligrams weekly

In both cases the acrodynia was cured by the addition of crystalline vitamin B_6 hydrochloride at the level of 15 micrograms daily. When linolic acid was subtracted from the above sucrose diet, the animals also developed acrodynia which was completely cured by the single addition of crystalline vitamin B_6, though the growth was not sufficiently improved. These experiments show that vitamin B_6 is an essential factor even for the rats fed on carbohydrate free diet and that fat does not spare vitamin B_6.

Polished rice, thoroughly washed with water and dried, contained a significant amount of vitamin B_6, since the rats fed on the diet, of which the carbohydrate of vitamin B_6 deficient diet was replaced by polished rice, developed no symptom of acrodynia. Commercial rice, corn and potato starches also contained a small amount of vitamin B_6 which was not extracted by simple treatment with alcohol, but was extracted after digestion with such an enzyme as pepsin. Rats receiving the starch purified by the enzymatic digestion followed by alcoholic extraction as the source of carbohydrate developed the same syndromes of acrodynia after four to five weeks as in the case of sucrose feeding.

Isolation of Three Kinds of the Pigment of Flavon Type from Soya Bean.

(pp. 369～372)

By Koji OKANO and Iwao BEPPU.

(The Central Laboratory of South Manchuria Railway Co.;
Received Apr. 8, 1940.)

Über die Nutzbarmachung des Vitamins C aus dem Pflanzenreich in Taiwan.

(SS. 372～385)

(I. Mitteilung.) Über die Reingewinnung von Vitamin C aus Ananassaft mit Hilfe von MgO.

Von Ryo YAMAMOTO und Takeshi HARA.

(Agrikulturchemisches Laboratorium der Taihoku Kaiserlichen Universität, Taiwan;
Eingegangen am 1. 4. 1940.)

Wir haben festgestellt, daß das Vitamin C in Ananassaft mit MgO zu einem unlöslichen Verbindungskörper geführt und von diesem Körper unter Zusatz von Säure wieder zu einer Lösung zurückgeführt werden kann. Diese Lösung ist so antiscorbutisch aktiv gegen Meerschweinchen wie die Ascorbinsäurelösung, deren reduzierendes Vermögen gegen 2 : 6-Dichlorphenolindophenol ganz dasselbe der ersten Lösung ist. Von dieser Lösung isolierten wir ein Ascorbinsäurederivat und nach ihrer Behandlung mit Methanol, Aceton und Aether schieden sich Kristalle ab, welche mit den der Ascorbinsäure übereinstimmten.

(II. Mitteilung.) Über die Konservierung von Ananas-Vitamin-C in Trockenmilch.

Von Ryo YAMAMOTO und Takeshi HAHA.

Trocknet man Milch und Ananassaft nach entsprechender Mischung, so entsteht die charakterische Trockenmilch, reich an Vitamin C, von einem Gehalt von etwa 50～200 mg %. Nach dem Tierversuche und auch nach der titrimetrischen Methode mit 2 : 6-Dichlorphenolindophenol zeigt sich, daß der C-Vitamingehalt dieser Trockenmilch fast 100%ig nach Verlauf von 3 Monaten, 95%ig nach 5 Monaten und 90%ig nach 8 Monaten wohl unverändert in Glasflaschen erhalten wird.

(III. Mitteilung) Der Vitamin C Gehalt von nicht eßbaren grunen Blättern aus Taiwan

Von Ryo YAMAMOTO, Takeshi HARA und Shizuko NISHIZAWA.

Wir haben nach der titrimetrischen Methode mit 2 : 6-Dichlorphenolindophenol eine Untersuchung über den C-Vitamingehalt der grünen, nicht eßbaren Blätter aus Taiwan ausgeführt. Die erhaltenen Resultate sind die folgenden : (Für grüne Materialien mg %)

Passiflora edulis, Sims.: 870; *Citrus Limon*, Burm. var. *Ponderosa*, Hort.: 615; *Passiflora laurifolia*, Linn.: 387; *Mangifera indica*, Linn.: 350; *Ricinus communis*, Linn.: 275 ect.

Biochemical Studies on "Bakanae" Fungus of the Rice.

Part V. Effect of Gibberellin on Growth, Fermentation and Size of Yeast Cell.

(pp. 385～388)

By Takesi HAYASI.

(Imperial Agricultural Station; Received Apr. 26, 1940.)

Gibberellin, the active principle which makes the rice seedlings grow abnormall tall, has no influence on the growth, fermentation or size of the yeast cell.

Über die quantitative Bestimmung der Pyrethrine.

(SS. 389～410)

VII. Mitteilung. Untersuchung der Bestandteile des Pyrethrumextraktes, die mit den Vorgängen bei der Maßanalyse von Pyrethrinen in irgend einer Beziehung stehen.

Von Sankiti TAKEI, Minoru ŌNO u. Kōkiti NAKASIMA.

(Aus d. Institut f. Chem. Forschung u. d. Agrikulturchem. Laborat. d. Universität, Kyoto;
Eingegangen am 26. April. 1940.)

Bei der Maßanalyse von Pyrethrin-I und -II muß man außer der Chrysanthemummono- und -dicarbonsäure noch das Vorhandensein einiger stets beigemengter organischer Säuren beachten; trotzdem sie der Menge nach gegenüber den Chrysanthemumsäuren unbedeutend sind, kann sich doch durch sie irgend eine unerwartete experimentelle Fehlerquelle ergeben.

Wir haben in 600 g Pyrethrumextrakt (Pyrethringehalt ca. 20%) gemäß der Behandlung bei der Maßanalyse von Pyrethrinen die untenstehenden Säuren festgestellt:

In den organischen Säuren, die *wasserlösliches* Ba-salz bilden, besteht der größte Teil (97.74%) aus den beiden Chrysanthemumsäuren (Chrysanthemummonocarbonsäure 46.30% und Chrysanthemumdicarbonsäure 51.44%), der Rest (2.26%) setzt sich zusammen aus *Essigsäure* (etwa 1/3), *iso-Buttersäure*, *Capronsäure*, *Caprylsäure* und *Caprinsäure*. Chrysanthemumsäuren finden sich in den *wasserunlösliches* Ba-salz bildenden Säuren nicht. Aus letzteren konnten wir hauptsächlich *Palmitin-*, *Öl-*, *Linol-*, *Linolen-*, *Behen-*, *Carnauba-* und *Azelainsäure* gewinnen; außerdem haben wir noch eine kleine Menge *Laurin-*, *Myristinsäure* und undefinierte Harzsäure konstatiert.

Auf Grund dieser Ergebnisse läßt sich annehmen, daß bei der Maßanalyse der Pyrethrine *durch Baryta-Behandlung* der größte Teil der beigemengten organischen Säuren eliminiert wird, so daß der sich bei dieser Methode ergebende experimentelle Fehler tatsächlich sehr gering ist und nicht beachtet zu werden braucht.

VIII. Mitteilung. Stufenweise Untersuchungen zur maßanalytischen Bestimmung des Pyrethrins mittels rein isolierter Chyrsanthemummono- und- dicarbonsäure.

Von Sankiti TAKEI u. Kiyosi WAKAZONO.

Ob die Chrysanthemummono- und -dicarbonsäure während des ganzen Prozesses der Maßanalyse ohne Verlust quantitativ bestimmt zu werden vermag, kann man mittels des Pyrethrumextraktes, das viele Beimengungen enthält, nicht exakt untersuchen, man muß vielmehr zu diesem Zweck mit *rein isolierter einheitlicher Chrysanthemummono- bzw. -dicarbonsäure* arbeiten. Nach wiederholter Reinigung kristallisiert die *reine Chrysanthemummonocarbonsäure bei etwa 10° C und schmilzt bei etwa 18～20°*. Die reinen Kristalle der Chrysanthemumdicarbonsäure schmelzen bei 164°.

Unsere vorsichtig und wiederholt ausgeführten Untersuchungen über die einzelnen Arbeitsstufen bei der Maßanalyse haben keinen merklichen Verlust an beiden Chrysanthemumsäuren beobachten lassen. Nach einigen weiteren Experimenten vermochten wir die Brauchbarkeit der Maßanalyse-Methode für die Pyrethrin-Bestimmung zu bestätigen.

On the Enclosed and Reclaimed Marsh Soil on the Coast of Kyushu.

(pp. 411～416)

By R. KAWASHIMA and M. NAGATA.

(Agricultural Chemical Laboratory, Kyushu Imperial University; Received Apr. 24, 1940.)

Enzymic Studies on Cereals

(pp. 417∼438)

By Gohei YAMAGISHI.

(Morioka Imperial College of Agriculture and Forestry; Received Apr. 24, 1940.)

(Part XI). On the Adsorption of the Amylase of Rice.

In the studies performed up to this time the author has pointed out that there are three amylases (the starch-liquefying, the starch-dextrinifying, and the starch-saccharifying enzymes) in rice.

The present experiment has been carried out to confirm whether these amylases can be separated by treating with the adsorbing agent.

The results obtained from this investigation may be summarized as follows:

(1) Studies were made on the adsorption of the starch-splitting enzymes in the germinated rice. As the adsorbing agent aluminium hydroxide A prepared by Willstätter's method was employed.

(2) It was confirmed that under the author's experimental conditions the adsorption of the enzyme was completed within almost thirty minutes.

(3) The degree of adsorption was increased with the increasing quantity of the adsorbing agent.

(4) It was observed that the higher the temperature (below 50°C.), at which the enzymes were extracted from the sprouted rice, the more the enzymes were adsorbed.

(5) The higher the concentration of the enzymes solution, the greater the degree of adsorption.

(6) The adsorption was influenced with the concentration of the hydrogen ion of the enzyme solution and the optimum pH for adsorption was found to be about 4.0∼4.5.

(7) When the concentration of the acetate buffer solution (pH 4.62) was increased over 0.1∼0.2 M, the decrease of the adsorption degree was brought about.

(8) In the case of neutral salts the optimum concentration for the adsorption of the amylases existed.

(9) All the inorganic and the organic salts (0.1 *N*) showed an effect on the adsorption of the amylases, except sulphate.

(10) Whereas glucose and maltose seemed to have some favourable effect upon the enzyme adsorption, starch showed an inhibitory action.

(11) The degree of adsorption was increased in accordance with the increase of the concentration of alcohol, but glycerin acted quite the contrary.

(12) The fact could be confirmed that when the enzyme extract was allowed to stand at lower temperatures, the degree of adsorption of the enzymes was larger than the case immediately after the extraction.

(13) According to the kind of starch-splitting enzyme there were some dif-

ferences as to the adsorption, and yet it will be almost impossible to separate the starch-liquefying, the starch-dextrinifying and the starch-saccharifying enzymes by this means.

(Part XII). On the Elution of the Adsorbed Amylase of Rice.

In paper XI of this series the author has reported on the separation of the germinated rice by adsorption on aluminium hydroxyde.

In this paper I wish to report the results of the experiments performed on the elution of the enzyme which was once adsorbed.

(1) It was deemed that the elution of the enzyme was finished within a very short period.

(2) There was the optimum hydrogen ion concentration for the elution of the enzyme, but the optimum pH differed depending on the nature of the buffer used, i. e., pH 9.3 (borate buffer) and pH 6.5 (phosphate buffer).

(3) When the pH of the solution was kept constant (6.5) using a phosphate buffer, the degree of the elution also increased in accordance with the increase of the concentration of the phosphate mixture.

(4) On releasing the enzyme with the basic substances, such as NaOH, Na_2CO_3, $NaHCO_3$, Na_2HPO_4, and $(NH_4)_2HPO_4$, each has its respective optimum concentration.

(5) The influence of the neutral salts (inorganic and organic) on the elution of the adsorbed enzyme was very different according to the nature of the salts, and sulphate exhibited the most remarkable effect. Thus it was concluded that K_2SO_4 was most suitable as the eluting agent of the adsorbed amylase.

(6) No effect of alcohol and acetone on the elution was observed.

(7) It was known that the unit enzymic activity of the eluate was increased nearly twenty-five times compared with the original enzyme extract.

(8) Although some difference of the degree of elution was noticed among the starch-liquefying, and the starch-dextrinifying, and the starch-saccharifying enzymes, it will be difficult to separate these three amylases by this method.

On the Hydrolysis of Fats and Fatty Acid Esters. (III)

(pp. 439~453)

By Toyoki Ono.

(Chemical Laboratory of the Fish Oil and Fish Meal Association of Japan;
Received Apr. 26, 1940.)

Selective Hydrolysis of Mixed Triglycerides and Fish Oils.

(1) The oleic acid radicals in α- and β-oleodistearin are saponified at 30°C with the same velocity in the homogenous system, but are split off more easily than the stearic acid radicals.

Similar hydrolysis was observed in β-laurodistearin, and showed that such selective hydrolysis is more rapidly carried out in the heterogenous system than in the homogenous system.

(2) On the hydrolysis of fish oils by lipase and KOH at lower temperature (–10°C), the higher unsaturated fatty acid radicals are more rapidly split off than lower unsaturated or saturated ones. Through the analytical results of hydrolysis for β-moroctodiolein, I have further proved these facts.

Table 7 shows this explanation of the mechanism of hydrolysis of mixed triglycerides.

Table 7. Selective Hydrolysis of Mixed Triglycerides.

<table>
<tr><th rowspan="2">Glycerides</th><th rowspan="2">Method of Hydrolysis</th><th colspan="4">Iodine Value</th></tr>
<tr><th>I</th><th>II</th><th colspan="2">III</th></tr>
<tr><td>α-Oleodistearin</td><td>KOH</td><td>38.40</td><td>33.25</td><td colspan="2">34.85</td></tr>
<tr><td>β-Oleodistearin</td><td>KOH</td><td>28.17</td><td>22.00</td><td colspan="2">25.71</td></tr>
<tr><td>β-Moroctodiolein</td><td>Lipase</td><td>160.15</td><td>165.60</td><td colspan="2">165.60</td></tr>
<tr><td rowspan="2"></td><td rowspan="2"></td><td colspan="2">Melting Point</td><td colspan="2">Neutral Value</td></tr>
<tr><td>I</td><td>III′</td><td>I</td><td>III′</td></tr>
<tr><td>β-Laurodistearin</td><td>KOH</td><td>59</td><td>60</td><td>224.40</td><td>217.53</td></tr>
</table>

I ……Free fatty acids liberated from glycerides.
II ……Unhydrolysed part.
III ……Original glycerides.
III′ ……Fatty acids in original glycerides.

Sterilizing Action of Acids. 12th Report.

Sterilizing Action of Aromatic Acids.

(pp. 454～460)

By Sogo Tetsumoto.

(Government Institute for Infectious Diseases, Tokyo Imperial University;
Received Feb. 27, 1940.)

(1). Concerning the sterilizing action of mineral acids, fatty acids and phenols I already reported.

Now I studied the sterilizing action of aromatic acids and their salts. Aromatic acids and their salts are contained in skins, leaves, flowers, and fruits of various vegetables, so they have an intimate relation to our daily life. Accordingly we see many reports concerning the sterilizing action or preservative power of aromatic acids and their salts on bacteria.

But many of the previous reports are almost limited to the sterilizing action or preservative power of salicylic acid, benzoic acid, cinnamic acid, tannic acid and their salts, while there are many aromatic acids and salts other than these.

In this experiment the sterilizing action at the same concentration was tested of as many aromatic acids as I could gather, in order to elucidate the relation of the number and position of CO_2H and OH group, pH, salts anion, etc., to the sterilizing action.

(2). Reagents.

Reagents used are listed in Table 1.

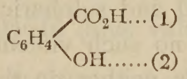
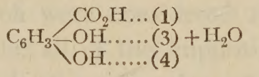
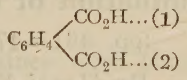
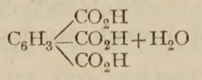
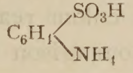
The following problems were studied by using these reagents:

(1). Sterilizing action of aromatic acids at the same concentration.

(2). The effect of aromatic acid salts and anions on the life of bacteria.

(3). The effect of the number of CO_2H group and OH group of aromatic acids on the sterilizing action of bacteria.

Table I. Aromatic acids.

Number of CO_2H group	Number of OH group	Acid	Rational formulae	M. W.	Weight % at *N*/1000
1	0	Benzoic	$C_6H_5 \cdot CO_2H$	122.048	0.0122
	1	Salicylic	 $C_6H_4\langle{}^{CO_2H \ldots (1)}_{OH \ldots\ldots (2)}$	138.048	0.0138
	0	Cinnamic	$C_6H_5CH : CH \cdot CO_2H$	148.064	0.0148
	1	Mandelic (i)	$C_6H_5 : CHOH \cdot CO_2H$	152.064	0.0152
	2	Protocatechuic	 $C_6H_3 \begin{cases} CO_2H \ldots (1) \\ OH \ldots\ldots (3) \\ OH \ldots\ldots (4) \end{cases} + H_2O$	172.099	0.0172
	3	Gallic	$C_6H_2(OH)_3 \cdot CO_2H$ (3), (4), (5)	184.048	0.0184
	4	Chinic	$C_6H_7(OH)_4 \cdot CO_2H + H_2O$	210.112	0.0210
		Tannic	$C_{14}H_{10}O_9 + 2H_2O$	358.112	0.0358
2	0	Phthalic (nor.)	 $C_6H_4\langle{}^{CO_2H \ldots (1)}_{CO_2H \ldots (2)}$	166.048	0.0083
3	0	Hemimellitic	 $C_6H_3 \begin{cases} CO_2H \\ CO_2H \\ CO_2H \end{cases} + H_2O$	228.109	0.0076
6	0	Mellitic	$C_6(CO_2H)_6$	342.108	0 0057
		Salphanilic	 $C_6H_4\langle{}^{SO_3H}_{NH_2}$	173.126	0.0173

SUMMARY.

By studies on the sterilizing action of aromatic acids and their salts on bacteria I obtained the results, the summary of which is as follows:—

(1). The order of strength of the sterilizing action of aromatic acids is:

salicylic acid $>$ salphanilic acid $\fallingdotseq$ mellitic acid $\fallingdotseq$ mandelic acid $>$
cinnamic acid $>$ protocatechnic acid $\fallingdotseq$ gallic acid.
Note :— $\fallingdotseq$ means nearly equal.

The weakest of all are phthalic acid and chinic acid.

(2). Aromatic acids of low pH have stronger germicidal action than acids of high pH like general ordinary acids.

(3). Salts of cinnamic acid, mandelic acid and chinic acid have strong promoting action for the bacteria tested, except *Vib. cholerae.*

(4). Anions of gallic acid, tannic acid and salicylic acid have sterilizing action but other anions except those just mentioned have no sterilizing action.

(5). According to the increasing number of CO_2H group, the sterilizing action of aromatic acids also increases proportionally, but on the contrary there seems to exist the inverse proportion between the increasing number of OH group and the strength of the sterilizing action of aromatic acids. These facts are evidently different from the action of aliphatic acids.

(6). When we compare the strength of the sterilizing action at the same concentration, we see that aromatic acids such as salicylic acid, salphanilic acid, mellitic acid, etc., have stronger sterilizing action than strong mineral acids such as nitric acid, hydrochloric acid and sulphuric acid.

(7). Aromatic acids have no such violent strong sterilizing action as certain few mineral acids or fatty acids, neither do they have so weak bactericidal power or rather promoting power for bacterial life like higher fatty acids such as palmitic acid or stearic acid.

A New Simple Method for the Quantitative Determination of Glycerine.

(pp. 461～475)

By Hogai Ka.

(The Institute of Scientific Research, Manchoukuo; Received Apr. 10, 1940.)

For the development of a quantitative method based on Denigés' glycerine and codein colour reaction, investigations were carried out to determine the conditions for the reactions, such as the colour reactions of the impurities and their elimination, its application and the comparison with other methods, and the results are reported as follows.

1. Solutions of glycerine (below 2.5%) of different purities were prepared and the time of oxidation and the time for the driving out of the excess bromine after the oxidation of the glycerine solutions by 0.4% bromine water, and the time of warming after the addition of codein solution and H_2SO_4 were investigated and the following results were obtained:

a) The intensity of blue colour increased with an increase of the time of oxidation but became nearly constant after 25 minutes.

b) The time of driving off the excess bromine had no distinct influence on the blue-colour value.

c) The intensity of the blue-colour value increased with an increase of the time of warming after the addition of codein and H_2SO_4 and reached constant after 20 minutes. Consequently, the suitable conditions for the Br_2 oxidation and the time of warming after the addition of codein and H_2SO_4 were 25 and 20 minutes respectively.

2. 5 cc amounts of the glycerine solution of each different concentration were taken and were oxidised with the addition of 10 cc, 20 cc and 30 cc of 0.4% Br-water and 20 cc of 0.8% Br-water respectively under the conditions named above, and it was found that the intensity of the blue-colour value was maximum when enough Br_2 was added while the addition of excess quantities of Br_2 caused no change in the colour value.

Further, it was found that the maximum blue-colour value was in direct proportion to the concentration of glycerine. Therefore the determination between codein and glycerine which has been previously oxidised with an excess of Br_2 with Lovibond's Tintometer, can be calculated from the following equation:

$$\text{Glycerine } \% = 0.04646 \text{ (blue value} - 1.5754)$$

3. The presence of H_2SO_4 and Na_2SO_4 showed no change in the blue value.

4. Attempts were made to eliminate the impurities by using lime, sugars, aldehydes, acids, alcohols, etc., which were considered to interfere with the blue value. With the exception of alcohols, all of the impurities could be eliminated.

5. The quantities of impurities in the glycerine of fats and oils, especially plant oils, are so small that glycerine can be determined directly after their saponification and decomposition with dilute sulphuric acid. This method gave approximately the same value as that of the acetin method, but the dichromate method gave a somewhat higher value.

6. Approximately the same values were obtained in the quantitative determinations of glycerine of known concentrations by this method after the elimination with lime of the impurities which were added experimentally.

Judging from the foregoing results, this method can be applied for the quantitative determination of glycerine in soy or wine after the elimination of impurities with lime.

Studies on the Tannin of *Acacia confusa* Merrill (I).

On the Nature of Tannin and Catechin.

(pp. 476～478)

By Minoru Isii and Yasuyosi Ōsima.

(Agricultural Chemical Department, Taihoku Imp. University, Taiwan;
Received Apr. 15, 1940.)

Acacia confusa Merrill (Japanese name Sosiju) is a chief fuel material in Taiwan, the bark of which contains about 10% of tannin substances. The purified tannin is a light brown amorphous powder and by chemical researches it was decided as a phlobaphene producing tannin. It shows specific rotation + 70.8° and gives 5.07% H and 59.51% C on analysis. We separated two catechins from the catechin mixture which amounted to 0.12% of the bark and each were confirmed as *d*-catechin and *l*-epicatechin by the following data.

	m.p.	Specific rotation	$[\alpha]_D$	H%	C%
d-Catechin	176°	± 0(1)	+16.7(2)	4.78	62.12
d-Pentaacetate	133°	+40.8(3)		4.83	60.35
l-Epicatechin	237°	−65.0(1)		4.84	62.10
l-Pentaacetate	153°	−13.0(3)		5.10	60.14

(1) 98% ethylalcohol (2) 50% acetone (3) acetylentetrachloride

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Studies on Ascorbic Acid. II.

The relation between glycolysis, ascorbic acid and glutathione in the defibrinated blood of the healthy rabbit.

(pp. 479～492)

By Kichinosuke Fujimura.

(Chemical Institute, Kyoto Imperial University;
Received Apr. 1, 1940.)

In the course of glycolysis in the defibrinated blood of the healthy rabbit, the following relations between blood sugar and ascorbic acid were found:

1 The glycolysis in the defibrinated blood of the healthy rabbit was complete in about 4 hours.

2 The glycolysis in the defibrinated blood of the healthy rabbit to which was added the ascorbic acid-oxidase was completed later than the glycolysis in the defibrinated blood to which no ascorbic acid-oxidase was added, and the content of the reduced ascorbic acid in it was about equal to that which included no ascorbic acid oxidase.

3 The glycolysis in the defibrinated blood of the healthy rabbit to which was added the reduced ascorbic acid was completed earlier than that which included no reduced ascorbic acid, in proportion to the quantity of the reduced ascorbic acid added.

4 Therefore, as to the glycolysis in the defibrinated blood of the healthy rabbit the reduced ascorbic acid plays an important rôle in the oxidation-reduction system and the reduced glutathione protects the reduced ascorbic acid from oxidation.

Studies on Vitamin C. (IV)

On the Isolation of Ascorbic Acid.

(pp. 493～500)

By Hisateru MITUDA.

(Laboratory of Nutritional Chemistry, Kyoto Imperial University;

Received Apr. 1, 1940.)

With special consideration of the fact that vitamin C is very unstable to oxidation but extremely stable to heating, I have tried to isolate ascorbic acid by studying the following points:

1) The effect of steaming on natural products containing ascorbic acid.
2) Suitable solvents.
3) The optimum pH of fuller's earth when used in the elimination of colouring matter.
4) The use of mercuric acetate in purifying ascorbic acid.

In addition some interesting suggestions relative to the substance of ascorbic acid oxidase were discovered.

I take this opportunity to express my sincere thanks to Prof. K. Kondo for his sympathetic guidance and encouragement throughout the course of these studies.

(March 19, 1940.)

Correction.

Zirō HIROSE: On the Denaturation of Sericin (Part 1)

Vol. 16, No. 3; March, 1940.

On page 44, line 32, read "8.139 g/L" for "1.139 g/L"

N. B.—Inadvertently the following plates were omitted from the previous issue. To be inserted between p. 68 and p. 69, This Bulletin, Vol. 16, No. 4, April, 1940.

Explanation of Plates.

Spectra showing transmission wave lengths through the filters.

Plate I. (Ilford Infra-red plate)

Plate II. (Kodak Panatomic plate)

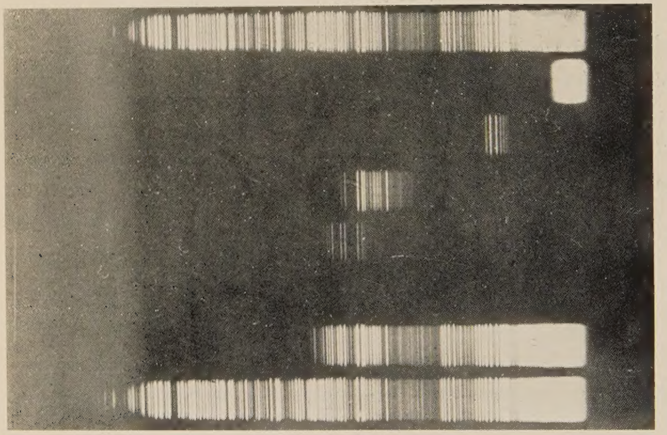


Plate III. (Oriental Hypersensitive Panchromatic plate)

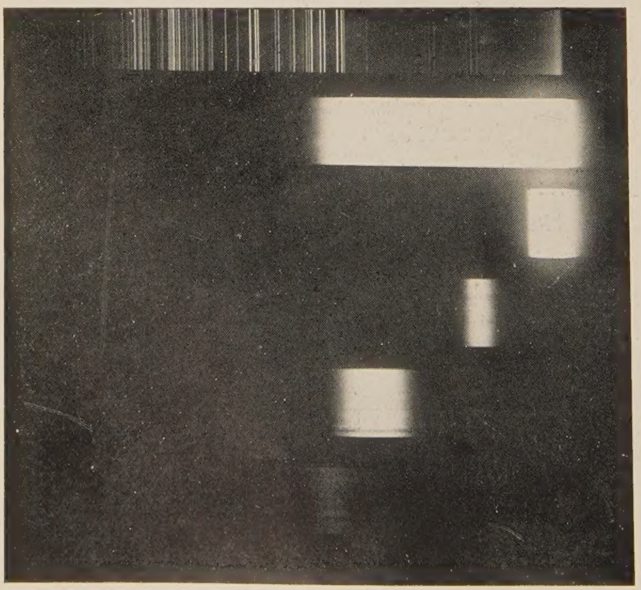


Plate IV. (Oriental Hypersensitive Panchromatic plate)

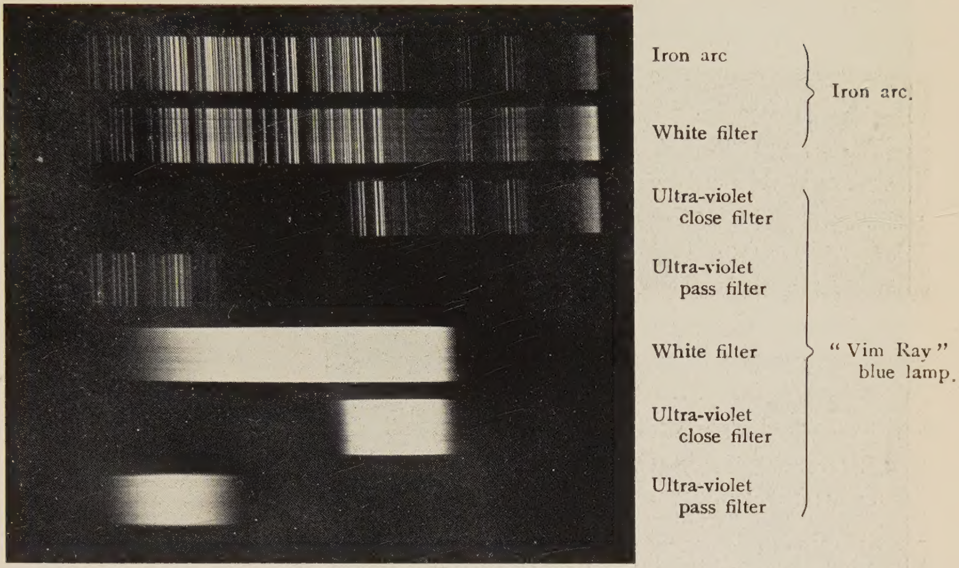


Plate V. (Oriental Hypersensitive Panchromatic plate)

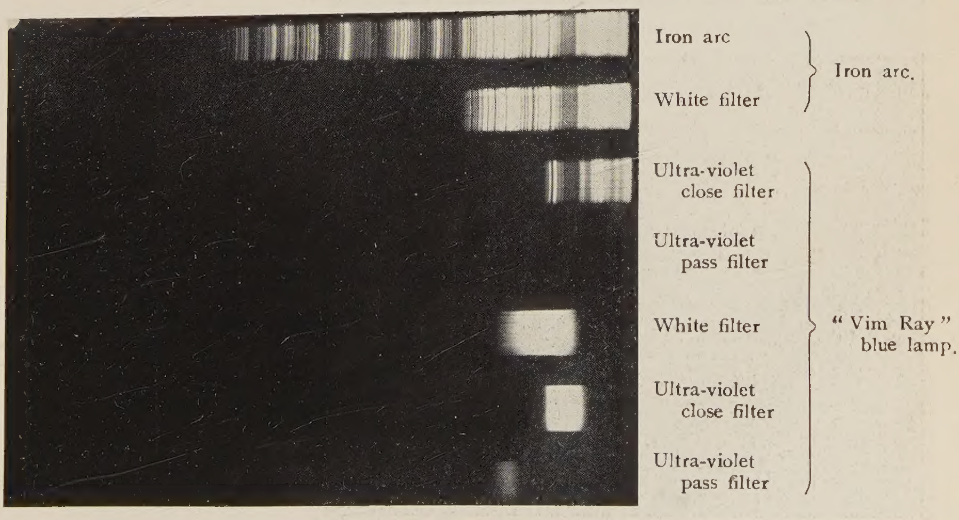
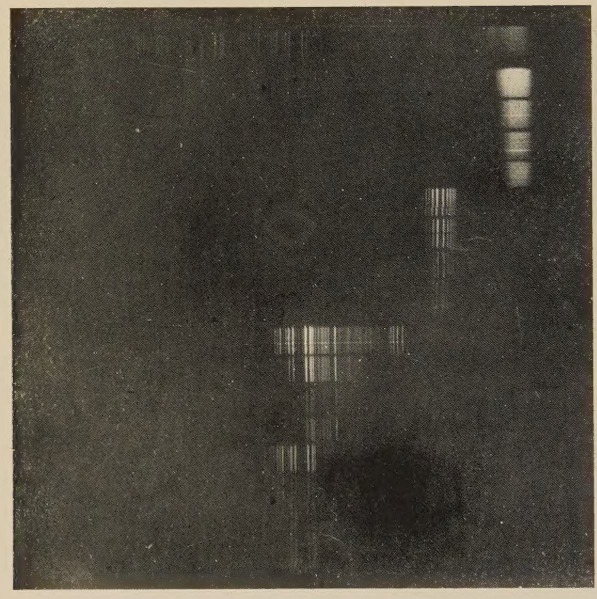
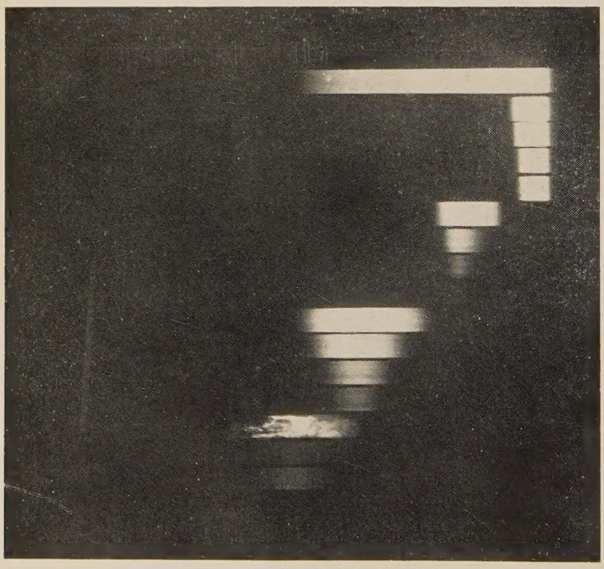


Plate VI. (Ilford Panchromatic plate)



Iron arc
Red a filter
b
c
d
Green a filter
b
c
d
Blue a filter
b
c
d
Violet a filter
b
c
d
} Iron arc.

Plate VII. (Oriental Hypersensitive Panchromatic plate)



Iron arc
White filter
Red a filter
b
c
d
Green a filter
b
c
d
Blue a filter
b
c
d
Violet a filter
b
c
d
} Nitra lamp.